the taxicab: neglected form of public transportation

Until recently, the taxicab has been largely ignored by transportation planners as an important mode of urban public transportation. A comparison of the taxi industry with the other modes of urban public transport shows that in 1970 taxicabs produced more revenue than bus and rail operations together, carried more passengers than the rapid rail and over half as many as buses. Taxicabs traveled more than twice as many vehicle miles as buses and rapid rail combined, and did this all without benefit of public subsidy.[1] In many small and medium-sized cities the taxicab is the only form of public transportation. In North Carolina, all of the forty-two cities with populations greater than 10,000 have taxicab service, while only thirteen of these cities have bus service.[2]

There are at least three important reasons why transportation planners and city officials should be interested in taxis. First, the demand-responsive, flexible nature of taxi service makes it an ideal means of providing mobility for those who cannot or do not drive or who lack the use of an automobile. Second, the taxi provides low-cost service that makes it an attractive alternative to deficit-plagued bus systems. Third, as of October, 1975, taxis are eligible for federal subsidies through the 1974 National Mass Transportation Assistance Act, under the same conditions as privately-owned transit operations.[3]

However, it is difficult to know how to utilize taxis more effectively as a transit service. There have been many proposals to adapt traditional taxi operations to changing needs, such as shared-ride, jitneys, and the deregulation of taxicab operation; but knowledge about who uses taxis, what kinds of trips they make and how current regulatory policy affects these users is necessary before informed public decisions can be made regarding the taxicab industry.

The purpose of this article is to show that taxis can be better utilized in small cities as a supplement or replacement for bus transit. Small city taxi users will first be contrasted with those in large cities both in the characteristics of the two groups and in their different trip purposes. The remainder of the paper will provide background on how taxis function in small cities and discuss proposals for better utilization of taxis in light of small city conditions.

who uses taxis

Studies of taxicab users[4] in the large cities of the northeast and midwest generally portray the taxicab user as a white woman, age 20-60, who does not work. These studies have shown taxi users to be either of a high or low income group, with relatively few middle income users. Taxi use is positively correlated with auto ownership, mainly for non-work trips, with residential destinations predominating. Travel connections, such as trips to and from airports, are a significant proportion of all trips. According to this image taxicab users have a choice of transportation modes, with either the private auto or other forms of mass transit available. Such information has tended to support the image of the taxi providing a luxury service to downtown business executives and upper-class suburban housewives, with occasional service to low-income, transit-dependent persons, who are unable, for some reason, to use bus or rapid rail transit for that particular trip.

Recent research by the Center for Urban and Regional Studies at the University of North Carolina provides a very different picture of the taxicab user.[5] This research was conducted in eight small and medium-sized North Carolina cities, rather than in the large urban areas of the northeast and midwest. Biases towards the literate and those prone to respond to surveys were eliminated by employing interviewers to ride in the taxicabs and collect the data. Results of the study reveal that small city taxi users are surprisingly poor, predominantly female, and largely black. Conversely, the large number of high-income taxi users found in the large cities is almost completely absent.

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The taxi-using population described by the North Carolina study is 64 percent female, 63 percent black, and 12 percent handicapped (See figure 1). This group is comprised mostly of local residents, only 17 percent identifying themselves as being from out-of-town. The majority of the taxi users, 53 percent, are employed; twelve percent are unemployed, with the remainder being retired, housewives, or students. Of those employed, 69 percent are service workers, operatives, laborers, or domestics. The annual family incomes they report reflect the large proportion of unskilled workers using taxis in small cities. Thirty-three percent of the taxi users have annual family incomes of less than $3,000, as compared to 11 percent of all the families in the sample cities. More than half of the riders in the small cities have incomes less than $5,000, though only 25 percent of the families in those cities are part of that income group. The low-income nature of taxi users in these cities is further demonstrated by the early-month ridership peaks that occur after social security and welfare checks are received. Only 17 percent of the small city taxi users have annual family incomes over $10,000. The taxi is used in small cities primarily for shopping, work, and social trips. (See figure 1).

A major difference between large and small cities is the absence of alternatives for the taxi using population in the small cities. Not only do most small town taxi users lack the use of a private automobile, they may even lack a driver's license. Mass transit, even in the cities where it is available, is rarely used by the taxi riders. In fact only about 20 percent of the taxi users *ever* use transit. The small city taxi user is clearly "taxi-dependent."

The North Carolina small city taxi user is clearly "taxi-dependent."

Photo by Fred Peace

TAXI USER CHARACTERISTICS STUDY

FIGURE 1, SURVEY RESULTS FOR SELECTED QUESTIONS

Trip Characteristics

1) Location of pickup:

Downtown:	39.6%
Elsewhere:	60.4%

2) Location of delivery:

Downtown:	37.6%
Elsewhere:	62.4%

3) Number of passengers/trip:

1:	71.5%
2 or more:	28.5%

4) Shared rides (trips having 2 or more passengers with different origins and destinations): 3.3%

Passenger Characteristics

5) Sex:

Male:	35.8%
Female:	64.2%

6) Race:

White:	37.4%
Non-white:	62.6%

7) Handicapped: 12.3%

8) Are you from out of town?

Yes:	17.3%
No:	82.6%

9) What is the purpose of your trip?

Shopping:	38.6%
Work:	19.6%
Social/recreational:	16.0%
Travel connections:	7.3%
Medical:	7.2%
School:	1.1%
Other:	10.2%

10) Would you use the taxicab more often if the fares were lower?

Yes:	70.8%
No:	29.1%

11) Would you use the taxicab more often if the fares were lower but you had to ride with strangers?

Yes:	60.0%
No:	40.0%

12) How many cars are owned by members of your household?

None:	58.2%
1 or more:	41.8%

13) Do you have a driver's license?

Yes:	26.0%
No:	74.0%

14) Was there a car available to you for this trip?

Yes:	20.0%
No:	80.0%

15) Are you:

Employed:	53.2%
Out of work:	12.2%
Retired:	14.6%
A housewife:	13.3%
A student:	6.7%

16) If you are employed, what type of work do you do?

Service worker:	29.1%
Operative:	16.8%
Laborer:	11.5%
Domestic worker:	11.2%
Craftsman:	8.4%
Professional/technical:	7.6%
Clerical:	5.7%
Sales:	4.4%

17) What is your yearly household income?

Less than $3,000:	33.0%
$3,000 to $4,999:	21.6%
$5,000 to $7,499:	18.2%
$7,500 to $9,999:	10.6%
$10,000 and over:	16.6%

public policy

In most states, including North Carolina,[6] state enabling legislation delegates the authority to regulate taxicabs to the local government, and taxicab ordinances are a part of most city codes. Regulations typically fall into four categories—market entry controls, operating standards, fare regulations, and requirements for financial responsibility.

The relationship between operating procedures, fares and controls over entry into the taxicab business has been the focus of public policy concerns in many large cities. It has been suggested that the combination of regulations restricting the sharing of taxis, municipally-set meter fares and restrictions on the number of taxicabs licensed to operate has had the effect of reducing the mobility of the taxi-dependent population. It is argued that higher fares and reduced supply of taxicabs resulting from such a combination of regulations force taxi users to forego or postpone trips they would make if the price and supply of taxi service were determined in a competitive market rather than by a regulated private utility. The fare paid by taxicab users has also been affected by the lack of any federal policy regarding taxi regulation. While mass transit users have been subsidized by federal programs, resulting in lower fares and better service, taxi users have not received any subsidy, despite their dependence on the taxi for mobility. Public policy at all levels of government thus affects the mobility of those who depend on the taxi, as policy determines to a large extent the price and the supply of taxi service.

Typically these issues have been considered only in terms of the information provided by studies of taxicab operations and taxi users in large cities. The results of the North Carolina study present an opportunity to review the existing policies and proposed reforms as they affect the small town taxi user.

the taxi as a mode of public transportation

Planners at all levels of government, presently exclude the taxicab from consideration as a mode of public transportation, leaving regulation to municipal commissions and police departments. This policy is consistent with the evidence of past studies indicating that the taxicab is a luxury good. However, the results of the North Carolina study call this into question. The fact that small city taxi users have low incomes, use taxis for necessary trips, and lack alternative means of transportation is evidence that the taxi, as well as the bus and the subway, is an essential means of providing mobility to the transit dependent. In referring to cities of less than 250,000, the Urban Mass Transportation Administration has for several years held that "The primary object of projects in this population category is considered to be mobility for those totally dependent on transit..."[8] Given this objective the taxi should be included in national, state, and local transportation plans and programs as a mode of public transportation. The need for this change in policy was recognized by UMTA in its decision to make taxi operations eligible for federal assistance.[9] Taxi users may now benefit from the resources available through the Urban Mass Transit Administration-technical assistance, capital grants, and operating subsidies.

subsidization

Despite this recent change in policy the UMTA program has not been modified to reflect differences between the organization and delivery of taxi service and other forms of public transit—differences which could make it difficult for taxi operators to obtain federal funding.

In order to benefit from these programs, taxi operators must meet the same requirements as privately owned mass transit systems.[10] The types of assistance provided are the same as those given mass transit systems, with subsidies being paid to the firm in compensation for operating deficits. The many requirements that must be met by the operator in order to participate in this program make it likely that only the largest taxi operators in the larger cities will have the capability to respond to and benefit from this change in policy. The eight sample cities of the North Carolina study reveal a great variation in the degree of business sophistication found in taxi firms. Conditions vary from the one- or two-

cab firm, operating from an unpaved lot with an outdoor telephone and no business records, to the thirty- or forty-cab operation, operating from a central garage with radio dispatch and computerized record-keeping. Federal programs which depend upon the cab company to apply for assistance through the local unit of government could easily have the effect of excluding the small neighborhood firm from participation.

As the taxi industry does not present great economies of scale,[11] a subsidy program should be equally accessible to cab companies of different sizes. One way in which this could be accomplished is to

The fact that many small North Carolina cities already subsidize some form of demand-responsive transportation is evidence that it is recognized as a public good meriting subsidization.

provide the subsidy directly to the taxi user, perhaps by selling reduced fare tickets good for taxi rides to particular user groups. The tickets would be paid by the user to the driver in lieu of the cash fare. The difference between the full fare and the cost to the user of the tickets would be the subsidy. This type of system has worked well for El Cajon, California,[12] and is the basis for the statewide T.R.I.P. program in West Virginia.[13] It offers additional advantages in that the subsidy will go only to those users in the target groups, and that such a program can easily be set up and managed through existing delivery systems. The taxi industry would remain in private hands and would continue to enjoy the efficiencies resulting from the commission system of paying drivers.

The fact that many small North Carolina cities already subsidize some form of demand-responsive transportation is evidence that it is recognized as a public good meriting subsidization. Public agencies providing subsidies to services that compete with the taxicab were found in several of the small North Carolina cities. Typically assistance is provided in the form of public support for vans or minibuses serving the elderly or other social service client groups. However, by providing the subsidy in the form of a public competitor to the private taxicab industry, these communities may inadvertantly cause taxi service to become scarce and more expensive. A more effective policy would provide the subsidy directly to the user for use in purchasing transportation. The subsidized user would benefit from improved service (such as decreased waiting times and night service) provided by the taxi; the non-subsidized user would benefit from the improved financial health of the taxi industry and its ability to maintain existing fares and dependable service. Public subsidies to another form of competition, the dial-a-ride bus (not found in any North Carolina city), should also be reconsidered in light of the ability of the taxi to provide substantially the same service at a much lower cost.

The small-cab firm is a commonplace sight in North Carolina.

Photo by Fred Peace

innovative modes of taxi operation

Changes in the regulations governing taxicab operation have been suggested as a method of reducing the cost of taxi service at little or no public expense. Altering these regulations to permit the implementation of innovative operational modes could permit or encourage the taxi operator to increase vehicle occupancy, resulting in reduced fares (or stable fares in the face of increasing costs). Each passenger would pay less, because the costs of the trip would be shared among several passengers. A survey of the literature reveals that there are three such innovative modes operating in a number of U.S. cities: shared ride, subscription service, and jitney service.

Shared ride involves the sharing of a taxi by persons not known to one another, but who have origins and destinations in relative proximity. A prospective passenger phones his origin, destination, and the number in his party to the taxi dispatcher. The dispatcher uses the two-way radio to

locate a vehicle close to the passenger's location that is heading in the same general direction of his destination, and the passenger is picked up. A passenger already in the vehicle will be diverted from a direct route to his destination, but will benefit from being able to split the fare. The shared ride mode in conjunction with the use of radio dispatching is sometimes referred to as dial-a-ride taxi, but shared riding may also be permitted in cities where cabs are hailed instead of called (Washington, D.C. is one example). Regulations in many cities have banned or discouraged shared riding by requiring the consent of the first passenger in the vehicle before additional passengers can be picked up (or by forbidding additional passengers unless the first passenger requests that they be picked up) and by requiring metered fares, which are difficult to allocate among several passengers. *Group ride*, in which several passengers with the same origin and destination share a cab and the fare, is also discouraged by laws requiring each passenger to pay the full fare. In the North Carolina study, seven of the eight cities surveyed allowed shared ride with the consent of the first passenger, and all but one permit group rides, as can be seen in Figure Two. However, only 3.3% of the trips surveyed were shared ride, possibly because firms make no effort to encourage it, and because of the requirements for the metered fare. By changing the regulation requiring the consent of the first passenger shared riding could be encouraged. Fare structure amendments would have to set a lower flat fare or a zoned fare structure for shared riding, with the possibility of retaining the meter for regular taxi service. Shared ride would also require that either a single dispatcher handle all shared ride requests, allocating them to the different firms, or that a franchise for shared-ride service be granted to one company (thereby increasing the chances that the service would be profitable). Cities in North Carolina currently have the authority to make these changes, thus implementing dial-a-ride taxi service at a very low cost to the taxpayer.

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The *subscription mode* is a second door-to-door service with potential cost savings over the conventional taxi mode. It is a pre-arranged dial-a-ride or shared ride taxi. The customer arranges with the company for transportation to and from a specific origin and destination at a specific time, usually on a repetitive basis. Having customers arrange such service well in advance enables the operator to match passengers having similar origins and destinations, making possible a fare reduction due to increased vehicle utilization. Subscription service is currently legal, and is in operation in many North Carolina cities. In practice, however, the passengers usually already know each other. Thus the consent of the first passenger, which is required, is not a problem, and neither is splitting the fare. Both of these regulations could present problems if the role of setting up the subscription service were taken by the firm or the city, since strangers might be placed in a cab together. The regulatory problems resulting in that case can be resolved in the same way that shared-riding is provided for in the regulations.

The *jitney* is the third mode that might be implemented through regulatory changes. Jitneys, as they operate in some cities, shuttle along relatively fixed routes on unscheduled, though frequent, headways picking up and discharging passengers anywhere along the route. Though jitneys are often found operating in competition with buses along high-density traffic corridors, it has been suggested that their small capacity, low cost, and flexibility would make them suitable for low demand areas, such as suburbs or smaller cities. As with the other modes, the intention is that savings resulting from increased utilization of the vehicle would result in lower fares. Jitneys are currently illegal in most cities and would require more regulatory change than shared ride taxi service. Under current regulations, some cities would require jitneys to be franchised like a bus. Fixed-route jitney service would require procedures for setting routes and reviewing route changes, a new fare system, special franchising, and new operating standards regarding dispatch, hours of operation, and jitney stops. Taxi-type regulations for driver's permits and financial responsibility might well apply to jitneys.

Despite the potential of these innovative service modes for reducing the fare paid by the individual taxi user, their application in small cities may face some limitations. Shared-ride and group ride depend on having sufficient travel demand to permit sharing the vehicle. However, the limited travel demands of a small city, when spread out over a large, low-density area, may not produce enough simultaneous trips with similar origins and destinations to make operations practical. Financially successful dial-a-ride taxi services have, however, operated in cities as small as Davenport, Iowa (population 98,457) and Hicksville, New York (population 48,075)[14]

market entry limitations

Existing regulations over market entry may also have the effect of limiting the mobility of those persons dependent on the taxi. Market entry restrictions control the number of taxicabs allowed to provide service in a given jurisdiction. The restrictions can be either the result of local legislation or of administrative policy. The restrictions can be in the form of set numerical limits, exclusive franchises to single operators, or the requirement of a fixed taxi to population ratio. The franchises for operation awarded under the restrictions can sometimes be sold, as in the case of the New York City taxi medallion, which represents the

franchise. These restrictions exist to protect the financial health of the taxi industry by reducing the competition among taxi firms. Taxi operators have lobbied for this policy by saying that this ensures financial responsibility in case of mishap, and that it allows them to provide better service through the cross-subsidization of unprofitable operations. The economic justification is that since the regulations effectively fix the size of the market for taxi service by setting the fare rates, they should also limit the number of cabs competing for that market. Limitation, it is argued, would guarantee adequate revenues to cover costs and provide a reasonable return on invested capital.

Some researchers, however, have suggested that removing the limits on entry would enable the market to provide greater numbers of taxis at lower cost.[15] Additional benefits from deregulation would include increases in the number of jobs available to unskilled workers and in the number of autos available to low-income persons who can use off-duty taxis as family cars.

This policy recommendation may be of value in the large cities where the relationship between the scarcity of cabs and high fares can be documented, but the survey of taxi users in North Carolina reveals that the effects of market entry regulations may not be as great in the small city. Each of the sample cities required that an applicant for a taxi franchise prove that the public convenience and necessity would be served by additional cabs, but there are no numerical limits contained in the taxi ordinances. An administrative policy limit exists in some of the cities, but even in those cities the number of active cabs was less than the number permitted (see Figure 2). It would appear that in the smaller cities sampled there is no effective barrier to market entry. State enabling legislation in North Carolina provides for the removal of franchises from inactive cabs, and forbids the transfer of franchises between operators. Enforcement of these provisions makes it difficult for a taxi operator to limit competition by maintaining franchises for inactive cabs or by purchasing franchises to prevent their use by others. A local policy of removing franchises from inactive cabs and reallocating them on the basis of convenience and necessity would enable continuing public control over the supply of taxi service as well as the price. Such a policy would prevent the accumulation of monopoly power by individual firms, at the same time limiting the total size of the market. Competition on the basis of service would be maintained even as industry revenues were protected, resulting in better service at the least cost to the user.

summary

It can be seen that the taxi is an important part of the urban public transportation system. This is particularly true of the smaller city, where taxis serve a predominantly low-income, transit-dependent population. In the past public policy regarding the taxicab has been in the form of municipal regulation similar to that accorded a privately-owned utility. However, increased recognition of the public service that taxis perform by providing basic mobility to the taxi dependent population should lead to changes in that public policy. Alteration of transit subsidy programs to reflect taxi participation, the reform of operating regulations to promote ride sharing, and changes in market entry controls could provide increased mobility for those dependent on taxis by lowering the cost to the user.

Footnotes

[1]John D. Wells and Fred Selover, "Characteristics of the Urban Taxicab Transit Industry", in *Economic Characteristics of the Urban Public Transportation Industry*, p. 8-5.

[2]Gorman Gilbert, *Taxicab User Characteristics in Small and Medium-size Cities*, unpublished preliminary survey data.

[3]Ronald J. Fisher and James A. Bautz, "Potential Markets for the Taxicab Industry", p. 2.

[4]Ronald F. Kirby, Kiran U. Bhatt, Michael A. Kemp, Robert McGillivray, and Martin Wohl, *Para-Transit, Neglected Options for Urban Mobility*, p. 114-119.

[5]This article is an outgrowth of a project initiated in January, 1975, to determine the social and economic characteristics of taxicab users in small and medium-sized North Carolina cities. The research was funded by the Urban Mass Transportation Administration and conducted by Bob Bach, Frank Dilorio and Fred Fravel, graduate research assistants, under the direction of Dr. Gorman Gilbert, Associate Professor in the Department of City and Regional Planning at the University of North Carolina, Chapel Hill.

[6]*North Carolina General Statutes*, Chapter 160A, Section 304, Regulation of Taxis.

[7]Arthur L. Webster, Edward Weiner, and John D. Wells, *The Role of Taxicabs in Urban Transportation*, p. 2-8.

[8]Urban Mass Transportation Administration, *Excerpts from External Operating Manual, August, 1972, Program Information for Capital Grants and Technical Studies Grants*, p. IIB-19.

[9]Fisher and Bautz, p. 2.

[10]Under Section 5 of the National Mass Transportation Assistance Act of 1974, applications for these subsidies must be processed through the local transportation planning procedure and submitted by a public agency. The deficits on operations can be subsidized on the basis of a 50% contribution from the local government being matched by an equal federal subsidy. Capital grants are made on a 20% local, 80% federal matching grant formula. These funds are currently restricted to urban areas over 50,000 population.

[11]J.R. Meyer, J.F. Kain, and M. Wohl, *The Urban Transportation Problem*, p. 356.

[12]Manny Cruz, "The Taxi: One City's Transit System", *Nation's Cities*, December 1974, p. 39-45.

[13]West Virginia Department of Welfare, *TRIP Facts*, p. 1-2.

[14]Frank W. Davis, Kenneth W. Heathington, Richard T. Symons, Stephen C. Griese, Roger W. Alford, and David P. Middendorf, *Economic Characteristics of Privately-Owned Shared-Ride Taxi Systems*, p. 8-10.

[15]S. Rosenbloom, "Taxis, Jitneys, and Poverty", *Transaction*, February 1970, p. 47-54.

TAXI USER CHARACTERISTICS STUDY

FIGURE 2, SAMPLE CITY DESCRIPTION SUMMARY

City	1970 Census Pop.	Franchised Cabs	Active Cabs	Active Cabs/ 1,000 Pop.	Regulation (2), (3), (4)					Competition to Taxis	
					Cab Inspector	Fare Type	Entry Limits	Shared Ride	Group Ride	Transit System	Public Transp. for Special Groups
Greensboro	144,076	135	128	0.8884	yes	meter	number (135)	yes	yes	yes	no
Durham	95,438	115	100	1.0476	yes	meter	number (115)	yes	yes	yes	yes
Wilson	29,347	50	47	1.6015	yes	meter	number (50)	yes	yes	yes	yes
Goldsboro	26,810	75	58	2.1633	yes	zone	none	yes	yes	no	yes
Salisbury	22,515	24	15	0.6662	no	meter	none	yes	yes	yes	no
Lexington	17,205	20	10	0.5873	no	meter	to one firm	no	yes	no	no
Morganton	13,625	45	45	3.3027	no	zone	none	yes	no	no	no
Roanoke Rapids	13,508	18	20 (1)	1.4806	yes	meter	none	yes	yes	no	yes

1. Includes cabs from adjacent Weldon, which have a limited franchise.

2. None of the cities have effective entry restrictions into the taxicab business. Limits listed do not appear in the taxi ordinances; rather they are matters of policy established by decisions on additional franchises.

3. Those cities which permit shared riding (by passengers who may have different origins and destinations) do so only with the consent of the first passenger.

4. A group ride is defined as a single fare for 1 to 5 passengers who have a common origin and destination.